ABSTRACT

This invention describes a method of rapid detection of micro-colonies of microorganisms by changing their shape from a regular semi-sphere to a long and thin cylinder. Cells are trapped by filtration in long (diameter/length= 1/10 – 1/100), cylindrical, parallel, micro-channels (1-500 picoliters each) that are open from both sides, and attached to a filter from one side. A micro-channel plate houses a multiplicity of micro-channels (diameter of each channel = 1 – 20 μm, and length 100 – 1000 μm). The micro-channel plate with cells trapped on the surface of the filter is attached to a nutrient media agar block. Cells produce micro-colonies of a long and thin shape according the shape of the micro-channel. The growth of microorganisms in the micro-channels permits a change in the number of cells to accomplish light absorbance. Fewer cells need a shorter time to reproduce. Thus detection and counting of cells can be accomplished in a rapid fashion. The light absorbance can be enhanced by additional coloration of micro-colonies by cell dyes or artificial chromogenic or fluorogenic substrates.